(3) The whole claim 4 is amended to

"An inverter device comprising:

an output-voltage calculating unit that calculates an output voltage command value based on a frequency command value for driving a motor and a state quantity of the motor, in each calculation period;

a PWM-pattern generating unit that outputs a PWM signal according to the output-voltage command value output by the output-voltage calculating unit; and

a switching unit that switches a direct voltage according to the PWM signal output by the PWM-pattern generating unit and supplies an alternating voltage with a predetermined frequency to the motor, wherein

the output-voltage calculating unit includes

a function of calculating a plurality of output-voltage command values when the frequency command value is greater than a predetermined value, and calculating one output-voltage command value when it is smaller than the predetermined value."

(4) Claims 1, 2, 5, and 6 are deleted.

7. Attachments

(1) Specification, page 3 and page 4

(2) Claims, page 14 and page 15

between calculation periods. At this time, if an output frequency is low, the calculation period with respect to the cycle of the sine wave becomes sufficiently short, which allows the sine wave to be divided into fine intervals. Therefore, deviation from the sine wave is small even by the linear complement, but if the output frequency is high, the calculation period becomes comparatively long. Therefore, in the conventional technology, it becomes difficult to approximate a fine curve of the sine wave, which causes the deviation from the sine wave to become significant.

The present invention has been achieved in view of the above problems, and it is an object of the present invention to obtain an inverter device capable of approaching the waveform of an output voltage closer to a sine wave irrespective of whether output frequency is high or low, as compared with the conventional technology, and of reducing the processing load of a CPU that calculates an output voltage command.

## DISCLOSURE OF INVENTION

In the present invention, an inverter device includes an output-voltage calculating unit that calculates an output voltage command value based on a frequency command value for driving a motor and a state quantity of the motor, in each calculation period; a PWM-pattern generating unit that outputs a PWM signal according to the output-voltage command value output by the output-voltage calculating unit; and a switching unit that switches a direct voltage according to the PWM signal output by the PWM-pattern generating unit and supplies an alternating voltage with a predetermined frequency to the motor. The output-voltage calculating unit includes a function of calculating a

larger number of output-voltage command values, when the frequency command value is greater than a predetermined value, than a case of being smaller than the predetermined value.

According to the present invention, the calculation load at a low speed area can be reduced. Furthermore, a time for calculation only when the output frequency is low can be ensured. The calculation includes, for example, an error correction of an output voltage due to a time for prevention of upper and lower arm short-circuit of the switching circuit.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a diagram of the comparison between a changing waveform of an output voltage command that is actually desired to be output and a changing waveform of an output voltage command that is actually output;

Fig. 2 is a diagram of the comparison between an output voltage waveform and a sine waveform;

Fig. 3 is a block diagram of the configuration of an inverter device according to one embodiment of the present invention;

Fig. 4 is a flowchart for explaining the operation of an output voltage calculator shown in Fig. 3;

Fig. 5 is a time chart for explaining a specific example of operations for generating a plurality of output voltage commands in one calculation period in the output voltage calculator shown in Fig. 3;

Fig. 6 is a time chart for explaining the operations of a PWM pattern generator (ASIC) shown in Fig. 3; and

Fig. 7 is a waveform diagram of the comparison between an output voltage obtained by the inverter device shown in Fig. 3 and an output voltage based on the conventional